***Supply Chain Management – Strategy***

***Design for Logistics***

***Chapter 11***

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|  | 🡨 Flow of Information 🡨 | | | | | | | | |  |
|  | Supplier | 🡪 | Manufacturer | 🡪 | Distributor | 🡪 | Retailer | 🡪 | Customer |  |
|  | 🡪 Flow of Material 🡪 | | | | | | | | |  |

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| **Design for Logistics**  **Chapter 11.** |
| *Coordinating supply chain design with product development to impact logistics through*  *packaging, processing, and standardization.* |

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| **Design** |  | **Example** |
| Design Supply Chain and Development Chain  Design material and processes  Design logistics  Design production | 🡪  🡪  🡪  🡪 | PUSH-PULL  Design for Logistics  Supplier Integration  Mass Customization |

**Design Supply Chain and Development Chain**

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|  | Chain Design | 🡪 | Drivers |  |
|  | Supply Chain  Design |  | >Demand uncertainty  >Economies of scale  >Lead time |  |
|  | Development Chain  Design |  | >Product/technology clockspeed. Project Introduction.  Innovative product vs. Functional product  >Make/buy decisions. Outsourcing Decisions.  Modular product vs. Integral product  combined with knowledge or capacity.  >Product structure (Design for logistics).  Packaging, parallel processing, standardization. |  |
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**Supply Chain**. Push vs. Pull

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| Demand uncertainty:  Economies of scale:  Lead time: | High uncertainty (PULL) vs. Low uncertainty (PUSH)  Low dependence (PULL) vs. High dependence (PUSH)  Short lead times (PULL) vs. Long lead times (PUSH) |

**Development Chain**. Innovative (Modular) vs. Functional (Integral)

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| Clockspeed: | Innovative (Fast) vs. Functional (Slow) |
| Project Variety: | Innovative (High) vs. Functional (Low) |
| Profit Margins: | Innovative (High) vs. Functional (Low) |

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|  | **Product Design**  **Development Chain and Supply Chain Strategy** | | | | *Supply Chain*  *Strategy* | |  |
|  | Low  Demand  Uncertainty  (PUSH) | High  Demand  Uncertainty  (PULL) |  |
|  | *Development*  *Chain* | *Product*  *Design* | Modular  Product | Fast  Clockspeed | *Push* | PULL |  |
|  | Integral  Product | Slow  Clockspeed | PUSH | Push-Pull |  |
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**Design for Logistics (DFL) – Inventory, Transportation**

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| Packaging.  >Design dimensions to reduce space.  >Design product for delayed packaging to support cross-docking. |
| Parallel processing.  >Translate series functions to parallel functions.  >Decouple processes to support parallel functions. |
| Standardization.  >Aggregate demand to support risk pooling and economies of scale.  >Create modularity. Create a modular product and/or modular process. |

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|  | ***Standardization*** | | | | |  |
|  |  | Process NOT Modular | | Modular Process | |  |
|  | Modular Product | 1. Part Standardization | | 2. Process Standardization | |  |
|  | Product NOT Modular | 3. Product Standardization | | 4. Procurement Standardization | |  |
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|  | 1. Part Standardization.  >Commonality | | | | |  |
|  | 2. Process Standardization.  >Postponement or Delayed Product Differentiation.  >Process re-sequencing to support postponement.  >Modularity of products through re-sequencing of processes to support postponement. | | | | |  |
|  | 3. Product Standardization.  >Downward substitution.  >Super product design. | | | | |  |
|  | 4. Procurement Standardization.  >Equipment procurement to meet multiple internal process needs. | | | | |  |
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|  | Where would PUSH-PULL boundary occur?  What are Drivers for location?  How does Outsourcing correspond to DFL? | | | | |  |
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**Extend production system design to “Mass Customization”**

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|  | Craft production |  |  |  |  |  | Increased  Variety and Service |  |
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|  |  |  |  | Mass customization |  |  |  |  |
|  |  |  |  |  |  | Decreased  Cost and Time to market |  |
|  | Mass production |  |  |  |  |  |  |
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|  | Most effective attributes in supporting mass customization:  *Instantaneousness – Costless – Seamless – Frictionless* | | | | | | |  |
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